

WHAT IS CLAIMED IS:

1. A magnetic recording medium, comprising: a substrate; and a magnetic layer, made of amorphous magnetic material, for magnetically recording information, wherein

the magnetic layer has bumps on a surface thereof, and density of the bumps is not less than 400 bumps/ $\mu\text{m}^2$ .

2. The magnetic recording medium as set forth in claim 1, wherein the bumps are formed by providing an underlayer, made of nonmagnetic metal element, between the substrate and the magnetic layer.

3. The magnetic recording medium as set forth in claim 2, wherein the nonmagnetic metal element is aluminium.

4. The magnetic recording medium as set forth in claim 1, wherein a magnetic compensation temperature thereof is not less than 25°C.

5. The magnetic recording medium as set forth in claim 1, wherein the magnetic layer is to magnetically record the information by receiving heat and a magnetic

field that are applied.

6. The magnetic recording medium as set forth in claim 2, wherein:

the underlayer has bumps on a surface thereof, and

a compound made of (i) an element constituting the amorphous magnetic material and (ii) the nonmagnetic metal element is formed between the magnetic layer and the underlayer.

7. A magnetic recording medium, comprising: a substrate; and a magnetic layer, made of amorphous magnetic material, for magnetically recording information, wherein

the magnetic layer has bumps on a surface thereof, and height of the bumps is not less than 2% with respect to an average layer thickness of the magnetic layer.

8. The magnetic recording medium as set forth in claim 7, wherein the bumps are formed by providing an underlayer, made of nonmagnetic metal element, between the substrate and the magnetic layer.

9. The magnetic recording medium as set forth in claim 8, wherein the nonmagnetic metal element is

aluminium.

10. The magnetic recording medium as set forth in claim 7, wherein a magnetic compensation temperature thereof is not less than 25°C.

11. The magnetic recording medium as set forth in claim 7, wherein the magnetic layer is to magnetically recording the information by receiving heat and a magnetic field that are applied.

12. The magnetic recording medium as set forth in claim 8, wherein:

the underlayer has bumps on a surface thereof, and

a compound made of (i) an element constituting the amorphous magnetic material and (ii) the nonmagnetic metal element is formed between the magnetic layer and the underlayer.

13. A magnetic recording medium, comprising: a substrate; and a magnetic layer, made of amorphous magnetic material, for magnetically recording information, wherein

the magnetic recording medium has bumps on a side of the magnetic layer, and density of the bumps is not less

than 400 bumps/ $\mu\text{m}^2$ .

14. The magnetic recording medium as set forth in claim 13, wherein the bumps are formed by providing an underlayer, made of nonmagnetic metal element, between the substrate and the magnetic layer.

15. The magnetic recording medium as set forth in claim 14, wherein the nonmagnetic metal element is aluminium.

16. The magnetic recording medium as set forth in claim 13, wherein a magnetic compensation temperature thereof is not less than 25°C.

17. The magnetic recording medium as set forth in claim 13, wherein the magnetic layer is to magnetically recording the information by receiving heat and a magnetic field that are applied.

18. The magnetic recording medium as set forth in claim 14, wherein:

the underlayer has bumps on a surface thereof, and

a compound made of (i) an element constituting the amorphous magnetic material and (ii) the nonmagnetic

metal element is formed between the magnetic layer and the underlayer.

19. A magnetic recording medium, comprising: a substrate; and a magnetic layer, made of amorphous magnetic material, for magnetically recording information, wherein

the magnetic recording medium has bumps on a side of the magnetic layer, and height of the bumps is not less than 2% with respect to an average layer thickness of the magnetic layer.

20. The magnetic recording medium as set forth in claim 19, wherein the bumps are formed by providing an underlayer, made of nonmagnetic metal element, between the substrate and the magnetic layer.

21. The magnetic recording medium as set forth in claim 20, wherein the nonmagnetic metal element is aluminium.

22. The magnetic recording medium as set forth in claim 19, wherein a magnetic compensation temperature thereof is not less than 25°C.

23. The magnetic recording medium as set forth in claim 19, wherein the magnetic layer is to magnetically record the information by receiving heat and a magnetic field that are applied.

24. The magnetic recording medium as set forth in claim 20, wherein:

the underlayer has bumps on a surface thereof, and  
a compound made of (i) an element constituting the amorphous magnetic material and (ii) the nonmagnetic metal element is formed between the magnetic layer and the underlayer.

25. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic layer has bumps on a surface thereof, and density of the bumps is not less than 400 bumps/ $\mu\text{m}^2$ ,

said magnetic recording device comprising magnetic field application means for applying a magnetic field, which

determines a magnetization direction of the magnetic layer, to the magnetic layer.

26. The magnetic recording device as set forth in claim 25, further comprising heating means for locally heating the magnetic layer, wherein

the magnetic field application means is to apply the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

27. A magnetic recording device, which causes a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic layer has bumps on a surface thereof, and height of the bumps is not less than 2% with respect to an average layer thickness of the magnetic layer,

said magnetic recording device comprising magnetic

field application means for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

28. The magnetic recording device as set forth in claim 27, further comprising heating means for locally heating the magnetic layer, wherein

the magnetic field application means applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

29. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic recording medium has bumps on a side of the magnetic layer, and density of the bumps is not less than 400 bumps/ $\mu\text{m}^2$ ,



said magnetic recording device comprising magnetic field application means for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

30. The magnetic recording device as set forth in claim 29, further comprising heating means for locally heating the magnetic layer, wherein

the magnetic field application means applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

31. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic recording medium has bumps on a side of the magnetic layer, and height of the bumps is not less

than 2% with respect to an average layer thickness of the magnetic layer,

said magnetic recording device comprising magnetic field application means for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

32. The magnetic recording device as set forth in claim 31, further comprising heating means for locally heating the magnetic layer, wherein

the magnetic field application means applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

33. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic layer has bumps on a surface thereof, and density of the bumps is not less than 400 bumps/ $\mu\text{m}^2$ ,

said magnetic recording device comprising a magnetic field generator for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

34. The magnetic recording device as set forth in claim 33, further comprising a heater for locally heating the magnetic layer, wherein

the magnetic field generator applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

35. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic layer has bumps on a side of the magnetic layer, and height of the bumps is not less than 2% with respect to an average layer thickness of the magnetic layer,

said magnetic recording device comprising a magnetic field generator for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

36. The magnetic recording device as set forth in claim 35, further comprising a heater for locally heating the magnetic layer, wherein

the magnetic field generator applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

37. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic recording medium has bumps on a side of the magnetic layer, and density of the bumps is not less than 400 bumps/ $\mu\text{m}^2$ ,

said magnetic recording device comprising a magnetic field generator for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

38. The magnetic recording device as set forth in claim 37, further comprising a heater for locally heating the magnetic layer, wherein

the magnetic field generator applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.

39. A magnetic recording device, for causing a magnetic layer of a magnetic recording medium to magnetically record information, said magnetic recording medium including: a substrate; and the magnetic layer, made of amorphous magnetic material, for magnetically

recording the information, wherein:

the magnetic layer is made of amorphous magnetic material, and

the magnetic recording medium has bumps on a side of the magnetic layer, and height of the bumps is not less than 2% with respect to an average layer thickness of the magnetic layer,

said magnetic recording device comprising a magnetic field generator for applying a magnetic field, which determines a magnetization direction of the magnetic layer, to the magnetic layer.

40. The magnetic recording device as set forth in claim 39, further comprising a heater for locally heating the magnetic layer, wherein

the magnetic field generator applies the magnetic field, which determines the magnetization direction of the magnetic layer, to at least one part of a heated region in the magnetic layer, so that the magnetic layer magnetically records the information by receiving heat and a magnetic field that are applied.